

Application S/No. 10/827,133
Response to Office Action
dated July 28, 2006

Docket No. 6704-29

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Amendments to the Claims

The following listing of the claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (previously presented): A purified nucleic acid construct comprising:
a gene cassette encoding a modified protein selected from the group consisting of:
a modified LuxA comprising an amino acid sequence in its carboxy terminus that
specifically binds to a tail-specific protease, and

a modified LuxB comprising a PEST sequence in its carboxy terminus that
specifically binds to a protein associated with a ubiquitin-proteasome pathway,

wherein the amino acid sequence that specifically binds to a tail-specific protease
results in a reduced half-life of the modified LuxA protein when expressed in a bacterial
cell compared to the half-life of the wild-type form of the LuxA protein when expressed
in the bacterial cell, and

wherein the PEST sequence results in a reduced half-life of the modified LuxB
protein when expressed in a yeast cell compared to the half-life of the wild-type form of
the LuxB protein when expressed in the yeast cell.

Claim 2 (currently amended): The purified nucleic acid construct of claim 1,
wherein said gene cassette encodes both the modified LuxA comprising an amino acid
sequence in its carboxy terminus that specifically binds to a tail-specific protease and a

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modified LuxB comprising ~~the amino acid sequence in its carboxy terminus that~~
~~specifically binds to the tail specific protease~~ a PEST sequence in its carboxy terminus
that specifically binds to a protein associated with a ubiquitin-proteasome pathway,
wherein the amino acid sequence that specifically binds to a tail-specific protease results
in a reduced half-life of the modified ~~LuxB~~ LuxA protein when expressed in a bacterial
cell compared to the half-life of the wild-type form of the ~~LuxB~~ LuxA protein when
expressed in the bacterial cell, and wherein the PEST sequence results in a reduced half-
life of the modified LuxB protein when expressed in a yeast cell compared to the half-life
of the wild-type form of the LuxB protein when expressed in the yeast cell.

Claim 3 (previously presented): The purified nucleic acid construct of claim 1,
wherein said gene cassette encodes all proteins necessary for production of
bioluminescence without addition of an exogenous substrate.

Claim 4 (currently amended): The purified nucleic acid construct of claim 1,
wherein the gene cassette ~~further~~ encodes the modified Lux A, the modified LuxB, LuxC,
LuxD, and LuxE.

Claim 5-8 (canceled).

Claim 9 (previously presented): A purified nucleic acid construct comprising a
gene cassette encoding a modified LuxA comprising a carboxy-terminal sequence
selected from the group consisting of SEQ ID NOS: 8, 9, and 10, wherein the half-life of

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the modified LuxA protein when expressed in an *E. coli* cell is shorter than the half-life of the wild-type form of the LuxA protein when expressed in the *E. coli* cell.

Claim 10 (currently amended): The purified nucleic acid construct of claim 9, wherein the gene cassette further encodes a modified LuxB comprising a PEST sequence in its carboxy terminus that specifically binds to a protein associated with a ubiquitin-proteasome pathway, the amino acid sequence in its carboxy terminal sequence that specifically binds to the a tail-specific protease, and wherein the half life of the modified LuxB protein when expressed in an *E. coli* cell is shorter than the half life of the wild-type form of the protein when expressed in the *E. coli* cell wherein the PEST sequence results in a reduced half-life of the modified LuxB protein when expressed in a yeast cell compared to the half-life of the wild-type form of the LuxB protein when expressed in the yeast cell.

Claims 11-14 (canceled).

Claim 15 (previously presented): The purified nucleic acid construct of claim 1, wherein the modified protein is the modified LuxB and said protein associated with a ubiquitin-proteasome pathway mediates degradation of the modified LuxB via a ubiquitin-proteasome pathway.

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Claim 16 (previously presented): The purified nucleic acid construct of claim 15, wherein said protein associated with a ubiquitin-proteasome pathway is SCF(GRR1).

Claim 17 (canceled).

Claim 18 (previously presented): A purified nucleic acid construct, comprising a modified LuxB comprising the PEST-rich 178 amino acid carboxy terminal sequence of G1 cyclin Cln2,

wherein the half-life of the modified LuxB protein when expressed in a yeast cell is shorter than the half-life of the wild-type form of the LuxB protein when expressed in the yeast cell.

Claim 19 (previously presented): A vector comprising the purified nucleic acid construct of claim 1.

Claim 20 (previously presented): The vector of claim 19, wherein said vector is a plasmid.

Claim 21 (previously presented): The vector of claim 19, wherein said vector is an expression vector suitable for expressing a nucleic acid incorporated in the vector in a cell type selected from the group consisting of: a bacterial cell, a yeast cell and a mammalian cell.

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Claim 22 (previously presented): A prokaryotic cell comprising the
vector of claim 19.

Claim 23 (previously presented): The prokaryotic cell of claim 22, wherein said
cell is a bacterial cell.

Claim 24 (canceled).

Claim 25 (previously presented): A eukaryotic cell comprising the vector
of claim 19.

Claim 26 (previously presented): The eukaryotic cell of claim 25, wherein said
cell is a yeast cell or a mammalian cell.

Claims 27-29 (canceled).

Claim 30 (previously presented): The purified nucleic acid construct of claim 18,
wherein said gene cassette further encodes LuxA.

Claim 31 (canceled).